(12) UK Patent Application (19) GB (11) 2 136 869 A

(43) Application published 26 Sep 1984

(21) Application No 8306911

(22) Date of filing 14 Mar 1983

(51) INT CL³
E05B 19/08 25/00

(52) Domestic classification
E2A 155 185 EE LT

(56) Documents cited
None

(58) Field of search
E2A

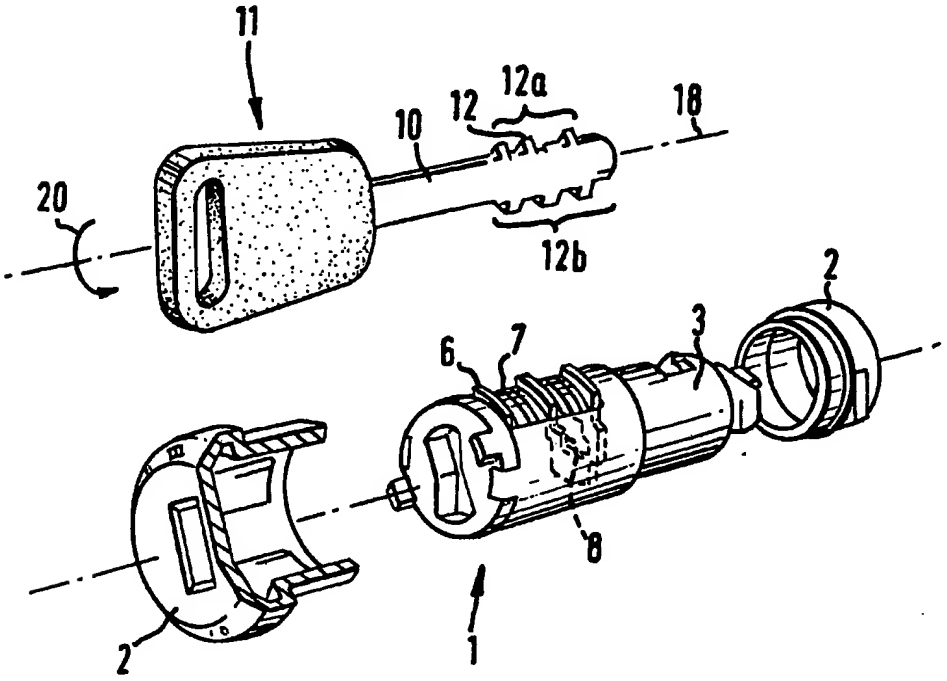
(71) Applicant
Ford Motor Company Limited (United Kingdom),
Eagle Way, Brentwood, Essex

(72) Inventor
Michael Walter Reader

(74) Agent and/or Address for Service
Robert William Drakeford,
15/448 Ford Motor Company Limited, Research & Engineering Centre, Laindon, Basildon, Essex

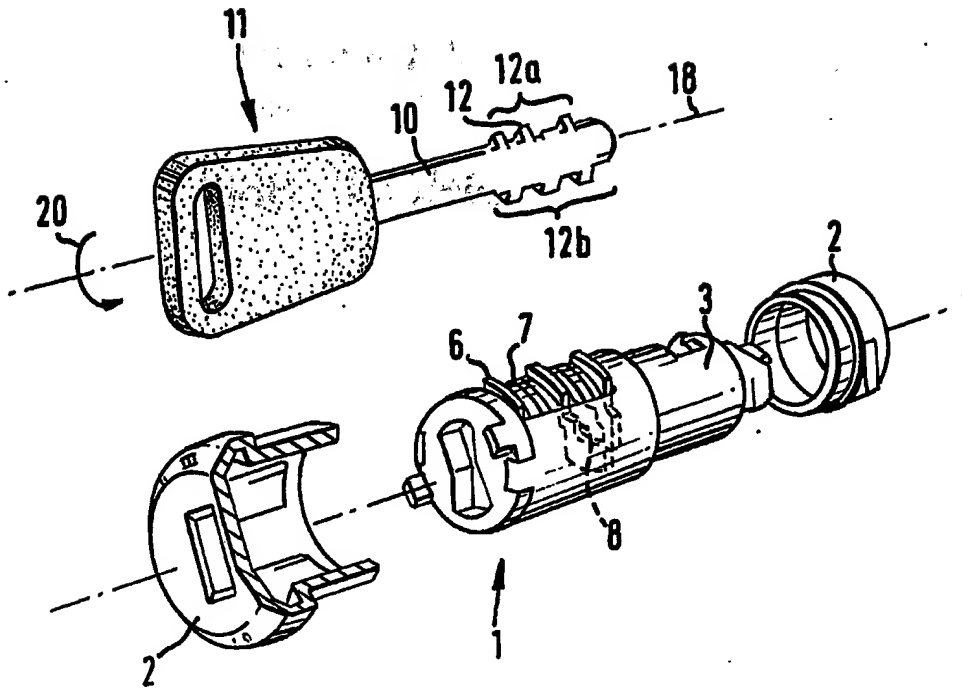
(54) Cylinder lock and key

(57) A lock and key set comprises a cylinder lock 1 having tumblers 6 arranged to be moved radially when a key 11 is inserted into the lock 1 and rotated. The tumblers are actuated by cams 12 on the key and the cams are arranged in two axially off-set sets 12a, 12b. According to whether the key is inserted into the lock in the orientation shown, or an orientation rotationally spaced therefrom by 180°, one or other sets of cams is brought into registry with the tumblers as a result of engagement of the key with a stop within the cylinder lock.



GB 2 136 869 A

The drawing(s) originally filed was/were informal and the print here reproduced is taken from a later filed formal copy.


11
12a
12
10
18
20
12b
2
3
6
7
8
1
2

SPECIFICATION

Cylinder lock and key

This invention relates to cylinder locks and keys therefor.

In one known cylinder lock, as, for example, described in our European Patent Specification EP–0061851 a plurality of tumblers are arranged to be moved radially between a released position and a locked position as a result of engagement by cam surfaces on the key when the key is rotated in the lock.

Although this type of lock is particularly secure, it suffers from the disadvantage that the key must always be inserted into the lock in the same rotational orientation. This can cause inconvenience to the driver, especially when opening the lock in darkness.

According to the present invention, there is provided a lock and key set comprising a cylinder lock having a plurality of tumblers arranged to be moved radially between a released position and a locked position, and a key comprising a handle, an axially extending bit adapted to be inserted into the lock, a plurality of cam surfaces formed on the shaft for moving the tumblers between the locked and released positions upon rotation of the key relative to the cylinder lock, and stop means for positioning the key axially within the cylinder lock with the cams in registry with the tumblers, characterised in that the cams are arranged on the key in two sets which are axially off-set from each other, and the stop means are arranged to position one set of cams in registry with the tumblers when the key is inserted into the lock in a first orientation and to position the other set of cams in registry with the tumblers when the key is inserted into the lock in a second orientation rotationally spaced from the first orientation by 180°.

By providing two sets of cams and arranging the stop means to bring the appropriate set of cams into registry with the tumblers, the key may be inserted into the lock in either of two possible angular orientations.

The invention also includes a key for a cylinder lock having a plurality of tumblers arranged to be moved radially between a released position and a locked position, the key comprising a handle and an axially extending bit adapted to be inserted into the lock, a plurality of cam surfaces formed on the shaft and adapted to the cam surfaces to move the tumblers between the locked and released position upon rotation of the key relative to the cylinder lock, and stop means for positioning the key axially with the cylinder lock with the cams in registry with the tumblers, characterised in that the cams are arranged on the key in two sets which are axially off-set from each other, and the stop means are arranged to position one set of cams in registry with the tumblers when the key is inserted into the lock in a first orientation, and to position theother set of cams in registry with the tumblers when the key is inserted into the lock in a second orientation rotationally spaced from the first orientation by 180°.

The invention also includes a cylinder lock comprising a plurality of tumblers arranged to be moved radially between a released position and a locked position by rotational movement of a key relative to the cylinder lock, and stop means for positioning the key axially within the cylinder lock with the cams in registry with the tumblers, characterised in that the stop means are arranged to position the key in two different positions axially off-set from each other according to whether the key is inserted into the lock in a first orientation or a second orientation rotationally spaced therefrom by 180°.

The stop means may be provided by appropriate shaping of either the key or the lock or both. For example, the stop means may comprise a shoulder on the key adjacent handle, or a shaped abutment surface on the end of the bit. Alternatively the stop means may comprise a shaped abutment on the cylinder lock, such as a face within the cylinder of the lock or a outer wall of the cylinder lock.

A preferred embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawing which is an "exploded" perspective view of a lock and key in accordance with the invention.

Referring to the drawing, a cylinder lock 1 comprises a two-part cylindrical housing 2,2, and a barrel 3 rotatably mounted in the housing. The barrel 3 is hollow and carries a stack of tumblers 6 spaced from each other by spacers 7. Each tumbler and spacer has an aperture through which the axially extending bit 10 of a key 11 can be inserted. The apertures in the spacers 7 do not interfere with the rotation of the key bit 10 in the barrel 3, but the apertures 8 of the tumblers 6 are shaped to engage cam surfaces 12 on the key bit 10.

The cam surfaces 12 are arranged on the key bit 10 in two sets as indicated at 12a and 12b. The axial spacings between the cam surfaces of each set is identical and corresponds to the spacings between the tumblers 6. However the two sets of cams are axially off-set from each other.

The cams 12 remote from the handle of the key have end faces which cooperate with a corresponding abutment (not shown) within the barrel 3 to position the key axially within the barrel 3. Since the two sets of cams 12a, 12b are axially offset from each other, the axial position of the key within the barrel 3 is different, according to whether the key is

inserted into the lock in the orientation illustrated in the drawing, or in an orientation spaced therefore by rotation through 180° about the axis 18 of the key, as indicated by the arrow 20.

In either orientation however, when the key is inserted into the barrel 3, one or other of the two sets of cams 12a, or 12b, will be in registry with the tumblers 6, and the other set of cams will be in registry with the spacers 7.

After insertion of the key in either of these orientations, initial rotation of the key causes the tumblers 6 to withdraw from their locking positions (illustrated in the drawings). Thereafter the barrel 3 rotates with the key to operate a component (not shown) such as a door latch mechanism attached thereto. In using the key therefore, the driver does not have to concern his or herself with the orientation of the key relative to the lock.

CLAIMS

1. A key for a cylinder lock having a plurality of tumblers arranged to be moved radially between a released position and a locked position, the key comprising a handle and an axially extending bit adapted to be inserted into the lock, a plurality of cam surfaces, formed on the shaft and adapted to the cam surfaces to move the tumblers between the locked and released position upon rotation of the key relative to the cylinder lock, and stop means for positioning the key axially within the cylinder lock with the cams in registry with the tumblers, characterised in that the cams are arranged on the key in two sets which are axially off-set from each other, and the stop means are arranged to position one set of cams in registry with the tumblers when the key is inserted into the lock in a first orientation, and to position the other set of cams in registry with the tumblers when the key is inserted into the lock in a second orientation rotationally spaced from the first orientation by 180°.

2. A lock and key set comprising a cylinder lock having a plurality of tumblers arranged to be moved radially between a released position and a locked position, and a key comprising a handle, an axially extending bit adapted to be inserted into the lock, and a plurality of cam surfaces formed on the shaft for moving the tumblers between the locked and released positions upon rotation of the key relative to the cylinder lock, and stop means for positioning the key axiall within the cylinder lock with the cams in registry with the tumblers, characterised in that the cams are arranged on the key in two sets which are axially off-set from each other, and the stop means are arranged to positi n one set of cams in registry with the tumblers when the key is inserted into the lock in a first orientati n and to p sition the ther set f cams in registry with the tumbers when th key is inserted into the lock in a second orientation rotationally spaced from the first orientation by 180°.

3. A cylinder lock comprising a plurality of tumblers arranged to be moved radially between a released position and a locked position by rotational movement of a key relative to the cylinder lock, and stop means for positioning the key axially within the cylinder lock with the cams in registry with the tumblers, characterised in that the stop means are arranged to position the key in two different positions axially off-set from each other according to whether the key is inserted into the lock in a first orientation or a second orientation rotationally spaced therefrom by 180°.

4. A key or cylinder lock substantially as hereinbefore described and as illustrated in the drawings.

Printed in the United Kingdom for
Her Majesty's Stationery Office, Dd 8818935, 1984, 4235.
Published at The Patent Office, 25 Southampton Buildings,
London, WC2A 1AY, from which copies may be obtained.